

**Amendments to the Specification:**

- Please replace the 4<sup>th</sup> paragraph of page 26 with the following rewritten paragraph:

*Figure 1* depicts the sequence of the Interleukin-8 receptor A (SEQ ID NO: 546) and the pentamer unique recognition sequences (URS) or PETs within this sequence (SEQ ID NOs. 547 - 581).

- Please replace the 5<sup>th</sup> paragraph of page 26 with the following rewritten paragraph:

*Figure 2* depicts the sequence of the Histamine H1 receptor (SEQ ID NO: 582) and the pentamer unique recognition sequences (URS) or PETs within this sequence that are not destroyed by trypsin digestion (SEQ ID NOs. 583-613).

- Please replace the last paragraph of page 27 with the following rewritten paragraph:

*Figure 15* illustrates a schematic drawing of fluorescence sandwich immunoassay for specific capture and quantitation of a targeted peptide (SEQ ID NO: 1318) in a complex peptide mixture, and results of readout fluorescent signal detected by the secondary antibody.

- Please replace the 2<sup>nd</sup> paragraph of page 28 with the following rewritten paragraph:

*Figure 17* illustrates the PETs and their nearest neighbors for the detection of phosphopeptides in SHIP-2 and ABL. The peptide sequences are represented in SEQ ID NOs. 1319-1326.

- Please replace the 4<sup>th</sup> paragraph of page 28 with the following rewritten paragraph:

*Figure 19* illustrates the common PETs and kinase-specific PETs useful for the detection of related kinases. The peptide sequences are represented in SEQ ID NOs. 1327-1348.

- Please replace the 5<sup>th</sup> paragraph of page 28 with the following rewritten paragraph:

*Figure 20* shows two SARS-specific PETs and their nearest neighbors in both the human proteome and the related Coronaviruses. The peptide sequences are represented in SEQ ID NOs. 1349-1354.

- Please replace the 6<sup>th</sup> paragraph of page 28 with the following rewritten paragraph:

*Figure 21* shows a design for the PET-based assay for standardized serum TGF-beta measurement. The peptide sequences are represented in SEQ ID NOs. 1355-1382.

- Please replace the 9<sup>th</sup> paragraph of page 28 with the following rewritten paragraph:

*Figure 24* illustrates that PET-specific antibodies are highly specific for the PET antigen and do not bind the nearest neighbors of the PET antigen. The peptide sequences are represented in SEQ ID NOs. 1277, 1278, and 1292-1295.

- Please replace the last paragraph above “Table SARS” on page 128 with the following rewritten paragraph:

All SARS-specific PETs identified using this method (SEQ ID NOs. 663-1267) is listed below in Table SARS.

- Please replace the table spanning pages 145-146 with the following rewritten table:

Peptide Sequence	Length (aa)	Affinity (K <sub>D</sub> in nM)	Reference
GATPEDLNQKLAGN ( <u>SEQ ID NO: 1268</u> )	14	1.4	Cell 91:799,1997

CRGTGSYNRSSFESSG (SEQ ID NO: 1269)	17	2.8	JIM 249:253, 2001
NYRAYATEPHAKKKS (SEQ ID NO: 1270)	15	0.5	EJB 267: 1819, 2000
RYDIEAKVTK (SEQ ID NO: 1271)	10	3.5	JI 169: 6992, 2002
DRVYIHPF (SEQ ID NO: 1272)	8	0.5	JIM 254: 147, 2001
PQSDPSVEPPLS (SEQ ID NO: 1273)	12	16 (a scFv)	NG 21: 163, 2003
YDVPDYAS (HA tag) (SEQ ID NO: 1274)	8	2	engineOS
MDYKAFDN (FLAG tag) (SEQ ID NO: 1275)	8	2.3	engineOS
HHHHH (HIS tag) (SEQ ID NO: 1276)	5	25	Novagen

- Please replace the table in the middle of page 146 with the following rewritten table:

PET Sequence	Ab name	Affinity ( $K_D$ in nM)	Parental Protein
EPAELTDA (SEQ ID NO: 1277)	P1	5	PSA
YEVQGEVF (SEQ ID NO: 1278)	C1	31	CRP
GYSFSYA	C2	200	CRP

(SEQ ID NO: 1279)			
-------------------	--	--	--

- Please replace the paragraph just above the table spanning pages 146-147 with the following rewritten paragraph:

These PETs are selected based on the criteria set forth in the instant specification, including nearest neighbor analysis. Listed below are several nearest neighbors of two of the PETs above (SEQ ID NOs. 1280-1291).

- Please replace the 2<sup>nd</sup> full paragraph of page 147 with the following rewritten paragraph:

For example, Figure 24 shows peptide competition results using the peptide competition assay described in Example 5. The left panel shows that antibody P1, which is specific for the PSA-derived 8-mer PET sequence EPAELTDA (SEQ ID NO: 1277), can be effectively competed away by the antigen PET (EPAELTDA, SEQ ID NO: 1277), with a half-maximum effective peptide concentration of around 40 nM. However, two of its nearest-neighbor 8-mer PETs found in the human proteome with only two- or three-amino-acid differences, EPVELTSA (SEQ ID NO: 1292) and DPTQLTDA (SEQ ID NO: 1293), are completely ineffective even at 1000  $\mu$ M (25,000-fold higher concentration). Similarly, the right panel shows that antibody C1, which is specific for the CRP-derived 8-mer PET sequence YEVQGEVF (SEQ ID NO: 1278), can be effectively competed away by the antigen PET sequence YEVQGEVF (SEQ ID NO: 1278), with a half-maximum effective peptide concentration of around 1  $\mu$ M. However, two of its nearest-neighbor 8-mer PETs found in the human proteome with only two-amino-acid differences, VEVNGEVF (SEQ ID NO: 1294) and YEVLGEEF (SEQ ID NO: 1295), are completely ineffective even at 1000  $\mu$ M (at least 1,000-fold higher concentration).

- Please replace the last full paragraph on page 149 with the following rewritten paragraph:

These problems can be readily tackled with the approach of the instant invention. For

example, the table below lists a common PET for hK1-hK11 (except hK6 and 7, which have their common PETs), as well as PETs specific for each hK proteins listed. In addition, both the family-specific PET and the protein-specific PET are within the same tryptic fragment. Sequences in the table are listed as SEQ ID NOs. 1296-1306.

- Please replace the first full paragraph on page 150 with the following rewritten paragraph:

In addition, the same approach may be used to detect the presence of alternative splicing isoforms of any protein. For example, there are three alternative splicing forms of hK15 (\* represents trypsin digestion sites), represented below in SEQ ID NO: 1307-1309:

- Please replace the last full paragraph above Example 9 (on page 150) with the following rewritten paragraph:

Thus, SGWGLVSH (SEQ ID NO: 1310) is a PET for detecting V1, with the three nearest neighbor peptides being AGWGIVNH (SEQ ID NO: 1311), SGWGITNH (SEQ ID NO: 1312), and SGWGMVTE (SEQ ID NO: 1313). Similarly, WGDVPCDN (SEQ ID NO: 1314) is a PET for detecting V1, with the three nearest neighbor peptides being WKDVPCED (SEQ ID NO: 1315), WNDAPCDS (SEQ ID NO: 1316), and WNDAPCDK (SEQ ID NO: 1317).